2011 Progress Report

The Committee's mission is to keep in touch with developments in the art and science of lighting throughout the world and prepare a yearly report of achievements for the Society. Acceptance in the Progress Report is based on an impartial judging process used by the committee to evaluate each submission on its uniqueness, innovation and significance to the lighting industry. There were 261 submittals in 2011; 156 were accepted into the report.

IES PROGRESS COMMITTEE

Kim Daley, LC
Chairperson

Sarena McComas, LC
Vice-Chairperson
Type A Productions

Mark Benguerel
Secretary
Finelite, Inc.

Bruce Belfer
Belfer Group

Greg Bennorth
Universal Lighting Technologies

Bill Busch
Philips Day-Brite

Robert Catone, LC
Guth Lighting

Rob Cilic, LC
OSRAM SYLVANIA, Inc.

Boyd Corbett
LED One, Inc.

Leslie Davis, LC
Leslie Davis Lighting Design

Jim Fowler

Claudia Gabay-Jones
Frost

John Green, P.E., LC
Cooper Lighting

Andrea Hartranft, LC
C.M. Kling & Associates, Inc.

Peter Jacobson
Con Edison

Kandy Kernes
Lighting Science Group Corp.

Rick Leeds
Acuity Brands

Howard Lewis
Lighting Alternatives

Mark Lien, LC
Hubbell Lighting, Inc.

Eric Lind
Lutron Electronics Co., Inc.

Susie Minton

Kathleen Packard, LC
BNA Consulting Engineers

Andrew Pultorak, LC
Lighting Design Lab

Edwin Rambusch
Rambusch Decorating Co.

Dyke Riffle
Riffle & Associates

Vincent Roy, LC
Philips Lighting Co.

Shelli Sedlak, LC
GE Lighting

Anthony Serres, LC
GE Lighting

Kenneth Walma
Cooper Controls

Jered Widmer
The Lighting Practice

Paula Ziegenbein, LC
OSRAM SYLVANIA, Inc.

Ardra Zinkon
Tec Inc. Engineering & Design

2011 Progress Report

The OCTRON 800XP/XL family of T8 lamps from **OSRAM SYLVANIA** is now rated at 62,000 hours life at 12 hours per start on programmed rapid start ballasts. Short cycle life is also improved to 55,000 hours at 30 minutes per start when using occupancy sensors.

OSRAM SYLVANIA expands the PENTRON Seamless T5 lamp options from last year's Report to include standard light output types. These lamps feature a unique basing configuration allowing end-to-end lamping. They are compatible with ballasts designed for standard lamps, and are available in 28, 21 and 14 watts and in a variety of color temperatures.

The lowest wattage T8 1-$^{5}/_{8}$ inch U-bent fluorescent lamp is now available from **GE lighting**. This 26-W lamp is a direct retrofit energy saving option that works on existing ballasts.

Philips Lighting has expanded the MasterColor Elite ceramic metal halide lamp offering with new 50-W types in T4 and T6 shapes. These lamps are rated at 108 lumens per watt, have high lumen maintenance, and deliver performance comparable with standard 70-W ceramic metal halide lamps. The lamps are rated at 15,000 hours life and have a CRI of 90.

Also from **Philips Lighting** is this 39-W T4 type MasterColor Elite with a GU6.5 base. These lamps are rated at 100 lumens per watt, with 85 percent lumen maintenance. The 50 and 39-W types are rated at 15,000 hours life and have a CRI of 90.

This 45-W lamp at 105 lumens per watt is designed for the outdoor market. When paired with an efficient electronic ballast, the **Philips** Cosmopolis system allows for smaller reflectors with better optical control resulting in a more efficient fixture. The lamp has a rated average life of 24,000 hours.

OSRAM SYLVANIA introduces three new long life additions to the METALARC POWERBALL Ceramic lamp offering.

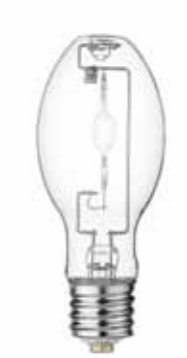
This 100-W ET23.5, mogul base lamp has an initial lumens per watt of 100 and a CRI of 94.

This 150-W ET35.5, mogul-based lamp also has a lumens per watt of 100 and a CRI of 90.

This 200-W ET18 lamp has a lumens per watt of 96 and a CRI of over 95.

All three lamps have an average rated life of 24,000 hours offering a white light source alternative to high pressure sodium with comparable life and superior color rendering.

EYE Lighting International introduces the Cera Arc 150-W ceramic metal halide, T-shape, mogul base lamp which features initial lumens per watt of 117, 80 percent lumen maintenance and 24,000 hours rated life. The lamp has a CCT of 3,700K and CRI of 75.



Also from **EYE Lighting** are CeraArc CMH ED23.5 mogul base lamps with similar performance characteristics to the previous product. These lamps are available in 100 and 150 watts.

Philips expands their offering of Energy Advantage metal halide lamps using Allstart Technology. This 145-W, ED17 has a CRI of 87 and is an energy saving alternative to 175-W lamps.

This **Philips** 330-W lamp is now available with a reduced size ED28 envelope and is intended to replace 400-W metal halide lamps.

The Energy Advantage 830-W, BT56 type replaces 1,000-W metal halide lamps and has a rated life of 16,000 hours and a CRI of 92. All lamps operate on both probe start and pulse start magnetic ballasts.

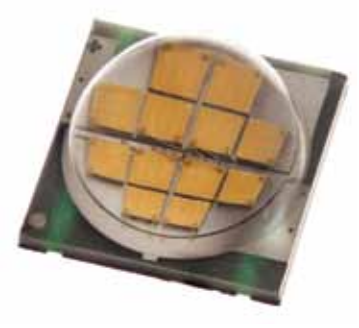
Philips Lighting introduces MasterColor CDM Elite Agro 315-W T12 metal halide lamps for the horticultural market. These lamps are reported to support excellent Photosynthetic Photon Flux or PPF with a value of 1.9 micromols per second, which is comparable to 600-W high pressure sodium.

METALARC pulse start 750-W lamps from **OSRAM SYLVANIA** have the longest life rating at 20,000 hours. These ratings reflect 25 percent longer life than competitive pulse start metal halide. The lamps are available in clear and coated versions.

OSRAM SYLVANIA has increased the life ratings on their LUMALUX ECOLOGIC and standard LUMALUX lamps to 30,000 hours, representing a 20 percent performance improvement over competitive high pressure sodium lamps.

2011 Progress Report

Philips EnduraLED dimmable LED candles consume 3 to 3.5 watts while incorporating a light guide to produce the decorative effect and light output similar to 25-W incandescent candelabra lamps. The lamps may be dimmed down to ten percent and have a life of 25,000 hours.



Cree XLamp MT-G LED is the first LED to be optimized for use as a 50-W MR16 halogen replacement lamp. It can achieve up to 1,550 lumens at 25 watts, is binned for chromaticity at 85 deg C, and is available in 6 and 36 volt options.

Solas Ray Lighting, a division of Continental Incorporated, introduces an LED Modular Light Engine with Dual Refractive Optics that creates a wide, uniform light spread from the point source of the LED. This design is realized in the SR series of LED lamps that use either 3 or 4 CREE XRG LEDs delivering 600 to 800 lumens while replicating the look of gas mantle lanterns.

Cree introduces the XLamp XM-L, a 5 by 5 millimeter LED that delivers 1,000 lumens at 10 watts, and more than 130 lumens per watt at 2 watts. The XLamp test data show that the average lumen maintenance at 6,000 hours is over 97 percent even at 85 deg C with an L_{70} projection of 158,000 hours.

GE Lighting Solutions has improved the performance of their Infusion LED module. The lumen output of the product has been improved from 470 lumens to 3,000, an increase of 600 percent. The Infusion LED has the smallest diameter for a twist-in module at 64 millimeters.

Philips EnduraLED A19 dimmable LED Lamps are alternatives to standard 40 and 60-W incandescent A19s. The 60 watt version is the first to earn Energy Star qualification. These lamps utilize a remote yellow phosphor to create omni-directional light. They have a life of 25,000 hours and dimming capability down to ten percent.

Lighting Science Group's Definity A19v2 is a 13.5-W LED A19 replacement for 60-W incandescent lamps. The lamp has an omni-directional output, 50,000 hours life, may be dimmed down to 5 percent, is available in color temperatures ranging from 2,700 to 5,000 Kelvin with a CRI of 85; it is Energy Star Compliant.

TerraLUX introduces TLM-R16B, the first LED module that is suitable for use in enclosed luminaires. The module has a high/low mode switch to replicate either 35 or 20-W halogen light output levels at 40 lumens per watt, is dimmable with low-voltage dimmers and has an L_{70} rating of 60,000 hours.

OSRAM SYLVANIA's ULTRA LED B10 lamps are true 25-W B10 incandescent replacement lamps delivering 150 lumens at 3.5 watts, or 43 lumens per watt. These dimmable LED lamps incorporate a light pipe which emulates filament sparkle. They are available in bent and blunt tip options with a CCT of 2,700 Kelvin, CRI of 85 and L_{70} life of 15,000 hours.

OSRAM SYLVANIA's ULTRA LED A19 is the highest efficacy LED replacement for 75-W incandescent A lamps. Providing 1,100 lumens at 14 watts, which is 78 lumens per watt, this lamp also features L_{70} life of 35,000 hours, omni-directional light distribution, 2,700 Kelvin CCT and dimming capability down to 20 percent.

Philips EnduraLED MR16 dimmable LED lamps are the first to incorporate active cooling technology, resulting in a life of 40,000 hours and light output comparable to 40-W MR16s with energy consumption of 10 watts. The lamps are compatible with most leading-edge triac dimmers, and dimmable down to 10 percent light output.

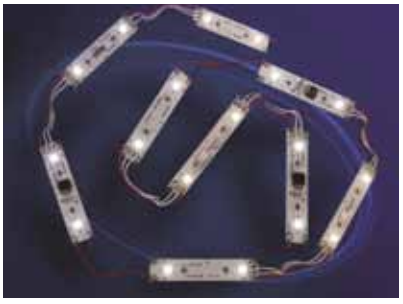
Lighting Science Group adds two BR lamps to its Definity offering. Definity BR30 is a 15-W LED with an optical design that achieves a smooth, soft beam pattern that replicates that of incandescent BR30 lamps. This lamp delivers 80 percent energy saving as a replacement to 75-W BR30 lamps.

The 18-W Definity BR40 replaces a 90-W incandescent BR40 lamp with similar beam characteristics. Both lamps are available in four color temperatures, have a 50,000 hour life rating and are dimmable down to 5 percent.

2011 Progress Report

Philips EnduraLED PAR30 Series 800 LED lamps are the first dimmable lamps of this type and deliver light output comparable to 50-W halogen PAR30 lamps while consuming only 12 watts. EnduraLED dimmable PAR38 lamps operate at 17 watts. Both the PAR30 and PAR38 types are available in a choice of color temperatures and beam angles, with life of 45,000 hours and are dimmable down to 10 percent.

Acculamp S-Series LED lamps from **Acuity Brands Lighting** include a new AR-111 shape with light output that exceeds that of a 20-W ceramic metal halide R111 lamp. It delivers 16,000 candela, an 8 deg beam angle, and consistent color over a life of 50,000 hours. The lamps have a GU 10 base and are available in 2,800 and 4,000 Kelvin.



In 2009, the Progress Committee accepted the first standard for DC power distribution in commercial interiors developed by the **EMerge Alliance**. This year marks the introduction of the first products registered to the EMerge Standard. **OSRAM SYLVANIA's** HF2 Chain is the first EMerge Registered 24-volt DC chain LED module.

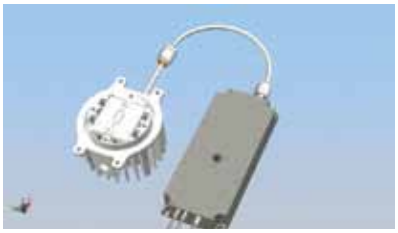
The ULTRA LED PAR38, from **OSRAM SYLVANIA**, features the highest center beam candlepower at 5000 candelas with a beam angle of 30 deg. The lamp consumes only 24 watts, has a CCT of 3,000K, color rendering index of 92, L_{70} life of 25,000 hours, is dimmable and outdoor rated.

OSRAM Opto Semiconductor's Hyper Red-OSLON and Golden Dragon Plus is the first and most efficient system of 1-W LEDs tuned to 660 nanometers. This is the primary wavelength requirement for plant photosynthesis in horticultural applications. It offers energy savings of 50 to 80 percent when compared with high pressure sodium lamps.

The **HF2** Narrow Stick is the first registered array LED module. Both of these products may be incorporated into new luminaires and installed in EMerge systems of distributed, low voltage DC power.

OSRAM SYLVANIA's LEDStixx LED is the highest efficacy display lighting system for small showcases. The housing has a 75-deg angle of movement allowing precise aiming. The product is rated at 50,000 hours life, available in several lengths and with fixed or flexible connectors.

Xicato's XSM Artist Corrected 1,000 lumen LED module delivers a CRI of 95 and an R9 greater than 90. With efficacies up to 45 lumens per watt, the LED uses remote phosphor to achieve color consistency within a two-step MacAdam ellipse and has an L_{70} life of 50,000 hours.



Luxim has improved their plasma lamp with the STA-75 Series. The new 450-W source, about the size of a Tic-Tac, provides 45,000 lumens. Having an L_{70} life of 50,000, the lamp system can also be dimmed to 20 percent of full power.

Guth Lighting's XTR LED is a UL1598C recognized retrofit for existing luminaires. Using CREE XM-L high efficiency LEDs, the unit provides 3,000 lumens at 87 lumens per watt in an LM-79 tested garage light, and contains sensing circuitry to prevent junction temperatures exceeding 100 deg C.

The **Xicato** XLM LED Module has been recognized by the Committee as being the first high flux LED module to deliver a rectilinear beam. XLM has been optimized for interior accent lighting applications with 3,000 lumens at 95 CRI.

This year we received several very small aperture LED downlights. The Element LED Adjustable from **Encompass Lighting Group** combines a 3-in. aperture with a multitude of features including round or square configurations, multiple beam spreads, 0 to 40 deg tilt with locking mechanism and multiple color temperature options.

2011 Progress Report

USAI Lighting has introduced NanoLED, a small aperture LED recessed downlight family of fixtures. This series features 595 lumens delivered from a 2.5-in. aperture with hot aiming and a field replaceable light engine.

Juno Lighting Group's Mini LED downlights and gimbals also feature small apertures measuring 2-$^{3}/_{8}$ in. with onboard LED drivers, three optic choices and an IC rating.

The Mellow Light 5 from **Zumtobel Lighting** Inc. is a family of recessed LED fixtures. This year they have extended this line to include an 89 lumen per watt version.

The first dedicated LED sloped-ceiling downlight comes from **Juno Lighting Group**. The standard and super slope versions are visually indistinguishable from incandescent downlights. They feature IC ratings and a 900 lumen output consuming 25 watts.

The D2LED downlight is from **Prescolite**, a Hubbell brand. The 2.25-in. opening is the smallest available using the Xicato module with unique reflectors. New construction or retrofit applications use the same housing. It is uniquely UL approved for use without a frame.

The Calculite 1.75-in. LED from **Philips Lightolier** has an aperture area of 2.5 sq in. Four beamspreads, a wall washer and three lens options, including warming and linear spread, are available on this small aperture downlight.

Philips Lightolier has extended their Xceed family of LED downlights to include this new 5-in.. IC recessed fixture that offers 47 to 52 lumens per watt at 3,500K. Additional features include a 3.5-in.. overall depth and tool-free installation that adjusts to any size grid ceiling.

Philips Lightolier has also introduced the Uniframe Integrated downlight system, which offers 900 to 1,500 lumens at up to 48.4 lumens per watt. Within a single integrated system, it can provide general and ambient lighting, wall washing, accent lighting and task lighting.

The eW Fuse Powercore from **Philips Color Kinetics** is the most compact high output color mixing LED fixture at up to 57.2 lumens per watt. Featuring end-to-end locking power connectors that rotate in 10 deg increments through 180 deg.

New from **Philips Omega** comes the Revelation 6-in. LED downlight for remodel and retrofit applications. This remote phosphor module incorporates MesoOptics diffusion to achieve 2,000 lumens at 51 lumens per watt. The module is available in 3,000, to 4,000K.

The first modular, recessed product line for 4-in. round and 4-in. squares that includes remote phosphor LED is called MultiSource by **Kurt Versen**, a Hubbell brand. Beam distributions can be changed in the field between directional, downlight and wall wash regardless of which was initially installed.

Liton Lighting announces the 2-in. Mini-Arc recessed LED luminaire. It offers 40 lumens per watt while consuming only 9 watts of energy. It is intended as a replacement for MR16 applications and is dimmable.

The Accord LED Series of troffers from **Cooper Lighting** offers a two-by-two luminaire with an efficacy of 88 lumens per watt and a 50,000 hour L_{70} life. The series also offers one-by four and two-by-four products, multiple color temperatures at 85 CRI, two initial light levels and a 0-10 volt dimming driver. A quick disconnect permits simple future upgrades.

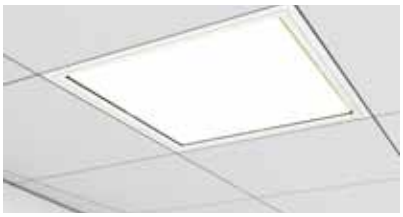
2011 Progress Report

The STE-Stratus E-series recessed luminaire is the most efficient basket style direct/indirect troffer. With efficiencies up to 91.6 percent, this luminaire from **Columbia Lighting**, a Hubbell brand, ranges from 5 to 15 percent more efficient than similar fluorescent fixtures.

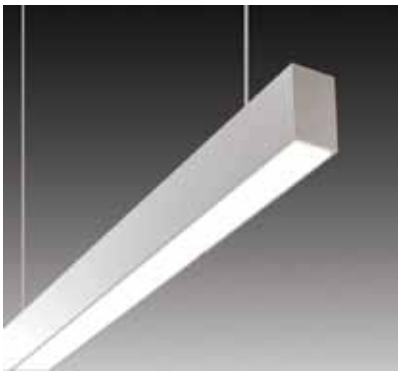
Cooper Lighting has used its Linear technology in a recessed LED luminaire that has a unique one-by-one footprint. It has a volumetric distribution at 65 lumens per watt, comes in three color temperatures and provides a 28 percent reduction in energy with a 10 percent increase in delivered lumens compared to a 32-W triple tube fluorescent fixture.

New from **Lithonia Lighting** of Acuity Brands is the RTLED Volumetric LED luminaire. Both 2 by 2, and 2 by 4 fixtures are available. The 2 by 4 version features 91 lumens per watt. The fixtures are rated for 50,000 hour system life, include 0 to 10 volt dimming, and utilize a CAT5 connector.

Columbia Lighting has developed Transition, which has the highest photometric efficiency of any fluorescent lensed luminaire. With efficiencies up to 101.2 percent, it is available with various fluorescent lamp types.



The highest efficacy edgelit troffer at 69 lumens per watt is the **GE** 2 by 2-ft recessed LED Edgelighting Troffer. The Microlens technology improves uniformity and light control.



The 22 LED Series of luminaires from **Cooper Lighting** is a narrow profile family of architectural luminaires with fixture efficacies of up to 63 lumens per watt. With a 25 percent energy savings over fluorescent, the system fits applications for recessed, suspended, and surface ceiling systems as well as wall-mounted. It comes with an integral dimming driver.

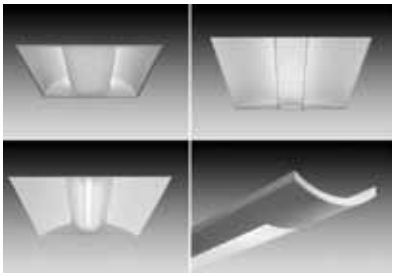
The fraqtir LED luminaire by **The Lighting Quotient** is a high performance asymmetric LED cove luminaire using unique refractive optics. Fraqtir has received Energy Star and Cradle to Cradle Silver Certification.

The DLWLED lensed wall wash for general illumination applications comes from **Gotham Downlighting**. It offers improved uniformity and efficacy, and is capable of being upgraded as technology progresses.

Lutron Electronics Co introduces the Stairwell Retrofit Solutions line of fixtures and sensors. A wireless occupancy sensor is separate from the fixtures, allowing for a high preset level when people are present and a low energy saving preset level when the stairwell is empty.

The COMBOLight LED luminaire was recently released by **Cooper RSA**. It is the first air-tight, IC-rated multiple-head recessed luminaire. Utilizing from two to six heads equipped with 18-W LEDs, its double-gimbal design allows a 45-deg tilt in any direction.

The Loft Micro LED achieves a luminaire efficacy of 85 lumens per watt using **Cooper Lighting's** Linear technology. Compared to a 54-W T5HO, this design provides a 17 percent reduction in energy with a 7 percent increase in lumens. In addition, the family can provide independent dimming of the uplight and downlight components.



Focal Point has introduced the first comprehensive selection of four fluorescent fixture families that are EMerge Alliance Registered. The plug and play features of EMerge products allow for easy fixture interchangeability and relocation.

2011 Progress Report

The Stasis LED Large from **Cooper Lighting** is a new track lighting option for retail and grocery stores with a center beam candle power of 27,740 in a 15 deg spot.

The Tracmaster T256LED and T257LED Series from **Juno Lighting**, a Schneider Electric company, are the first 2-ft LED track luminaires with efficacies of 57 and 59 lumens per watt, respectively. They feature a 50,000 hour rated life.

Philips Lightolier also introduces the Lytespan Mini LED Micro Cylinder. This luminaire has one of the smallest available diameters for an LED fixture at 2-$^{3}/_{8}$ in. and offers 46 lumens per watt.

ERCO introduces Logotec LED track luminaires employing the Spherolit lens and producing 88 lumens per watt. Six light distributions are available and each luminaire is capable of being dimmed locally on the unit or from a separate dimming control.

Philips Lightolier has introduced the highest efficacy LED spot luminaire available, the new Lytecaster Spot LED. The luminaire provides 65 lumens per watt at 85 CRI.

Intense Lighting introduces an LED track luminaire incorporating a modular LED source offering 1,200 lumens at 40 lumens per watt. The trackhead is available in 16, 24, 32 and 50 deg beamspreads and multiple color temperatures.

This year, we saw many manufacturers state lamp life well beyond the 20 to 50,000 hours typical for gas discharge and LED sources. The Latitude LED Highbay by **Philips Canlyte** has been recognized for its high efficacy of 90 lumens per watt and a L_{70} service life of 100,000 hours. Latitude also features a life of 60,000 hours for the LED driver in an ambient temperature of 45 deg C. **Philips Day-Brite** and **ExceLine** have parallel products based on the same technologies with similar characteristics.

The eW Burst Compact Powercore from **Philips Color Kinetics** is a compact, exterior-rated LED lighting fixture designed for accent and site lighting. It claims a 90,000 hour maintenance-free lifetime at 25 deg C.

New from **Lusio Solid State Lighting**, a division of LightWild, is their High-Bay luminaire, available in both 2 by 2, and 1 by 4 sizes, this high-bay is considered the lowest glare luminaire on the market due to Lusio's Pro-optics. The luminaire is intended for ceiling heights of 12 to 60 ft, and is offered in standard and high-output, in both 4,100 and 5,700K.

The HFCLS-Slim Cold Cathode Luminaire from **Cathode Lighting** Systems Inc. is rated at 100,000 hours life. It is 60 percent smaller than the previous version making it the smallest UL listed cold cathode fixture at 2 ¾ in. wide by 2 $^{1}/_{3}$ in. tall.

The HPR-LED Collection from **Finelite**, Inc is a complete high performance recessed family using mid-powered LED light engine modules. The manufacturer claims 90 percent of initial light output at 100,000 hours life.

Meteor Lighting introduces its High Ceiling 112-W LED Platform, an 8900 lumen LED luminaire with an L_{70} at 60,000 hours. A vacuum-sealed copper heat pipe is claimed to dissipate heat 120 times faster than standard aluminum alloy versions. Multiple beam angles and color temperatures are available.

2011 Progress Report

The H-Series LED High Bay from **Albeo Technologies** was recognized for its high lumen output at over 100 lumens per watt. It offers 47,300 lumens at an input wattage of 465. Albeo claims that the H-Series is the first all LED high bay that offers one-for-one replacement of up to 1,000-W HID fixtures.

The Archway Passage LED luminaire from **Acuity Brands** was recognized for its 76.6 lumens per watt rating at 60,000 hours. A 0 to 10-volt dimming driver is standard. Options include motion sensing, 100 to 50 percent power-control, photocell, emergency battery pack, digital lumen maintenance and a wireless monitoring system.

New from **Philips Widelite** comes the DecoFlood HID series using the Philips Cosmopolis lamps. Available in two square and three round housing styles with wattages from 22 watts to 400 watts, the fixture offers tool-less entry and an IP65 rated housing.

The XHB3 Highbay by **LSI Industries** was recognized for its high lumens per watt and L_{70} rating of 100,000 hours. An output of up to 16,000 lumens combined with an efficacy of over 81 lumens per watt qualify it to compete with both 400-W metal halide and T5HO high bays.

The first vaportite LED fixture has been introduced by **Hubbell Lighting**. Designed to fit the old fixture mount, it can be used as a complete fixture or as a retrofit. The LED body extrusion is designed with radiating fins on the inside and shaped to support the LED driver.

BK Lighting brings us the Denali luminaire, a 3-in. diameter aperture LED spotlight that incorporates a 2,000 lumen package in a 15-W luminaire. Its scalable and modular design allows for future upgrades and easy maintenance. It is available in multiple beam distributions and color temperatures.

Philips Gardco introduces the DLF7 LED floodlight. It provides the highest lumen per watt efficacy rating of 92 and has an L_{70} listing of 100,000 hours. It offers six different beam distributions, in either 35, 55 or 75-W packages. It is available in cool white, neutral white, or warm white and with a 0 to 10 volt dimmable driver.

The **Philips** CosmoPolis lamp was accepted in the 2010 report. The Parkway Square Pedestrian Scale luminaire from AAL, a Hubbell brand, is the first fixture to offer this system. It features both horizontal and vertical optics as well as an indirect system to eliminate harsh shadows.

New from **HessAmerica**, is the Livorno architectural LED luminaire for Area and Street Lighting. Incorporating the LEVO LED module, this luminaire offers a low-profile solution that is easily field replaceable. It is available in two sizes for various mounting heights with two different light distribution patterns in 3,000, 4,000 and 5,600K.

Hydrel, an Acuity Brand, introduces the 8100/8200 Series LED floodlight luminaire. This floodlight offers the highest lumen output available in this compact size. The luminaire features up to 12,896 delivered lumens, at 52 lumens-per-watt. It is available in six different distributions in 3,000, 4,100 and 5,300K.

The highest performance small scale exterior luminaire is the Parkway Square Accent Scale from **AAL**. It is the first T6 horizontal optical system designed specifically for the Philips MasterColor CDM-T T6 Elite. The efficiency is 75.4 percent, and this fixture offers full recyclability.

The **GE** Evolve LED Modular Area Light is the first LED outdoor luminaire with field installable shielding. It utilizes one power supply matched to each module.

2011 Progress Report

GE has introduced the Evolve series of Salem and Avery LED luminaires, the first post top fixtures with LED optics designed to minimize shadowing under the pole by using reflective technology versus competitive bar/refractive technologies.

The MRR-07381 MRI Downlight from **Kirlin** offers the highest efficacy in an MRI LED downlight at 42.7 lumens per watt. This new product is part of the Kirlin SmartLed MRI lighting product series and features a 5.75-in. depth, and 1,836 lumens.

SmartMRI LED System from **Kirlin** offers the first LED module with three zones of dimming for MRI lighting applications. It features SmartFilter, a unique three-circuit RFI/EMI DC filter, and SmartSupply, a 0 to 10 volt remote DC power supply.

Acuity Brands / Health Care Lighting introduces Surg5, the first five-lamp surgical T8 troffer. It delivers the light intensity and distribution equivalent to the industry-standard six-lamp surgical troffer. Surg5 fixture electronics are located for easy access without removing lamps and reflectors.

Also from **Kirlin**, the MRR-07383 MRI Wall Wash is the first LED wall wash fixture for MRI lighting applications at 29.4 lumens per watt. The wall wash is included in the Kirlin SmartLed MRI lighting product series. It features a 6.125-in. depth and 1,502 lumens.

Recognized as the industry's most compact high output cove LED fixture at up to 57.2 lumens per watt, the iColor Cove MX Powercore luminaire has been introduced by **Philips Color Kinetics**. Fixtures have internal drivers, and the fixtures can be installed end-to-end in a single run of up to 110 feet.

By High End Systems, **Intellispot** is recognized for its unique color mixing system. Furnished with the Indigo Highlighter, the light output from four 1-W indigo LEDs increases the layering abilities of the large-exiting aperture fixture. It produces a 20,000 lumen output from the 850-W HID lamp, but also provides clear projections with a zoom range of 11 to 55 deg.

The Grasshopper and Powercast LED outdoor projectors from **Erco Lighting** incorporate Sperolit optical technology for exceptional beam control. They both feature 77 lumens per watt. The optical system provides options of spot, flood, wide flood, oval flood and wallwash light distribution.

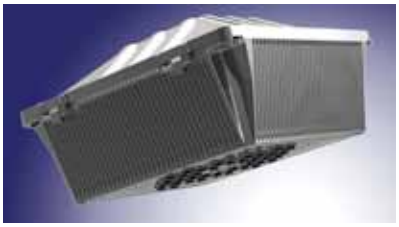
The **Kenall** TekDek LED Parking Garage Luminaire offers a unique low brightness optical system. It features a tertiary lens over secondary optics for a significant reduction in glare. The lens provides vertical illuminance and 3 percent uplight to reduce cave effect.

The **KREIOS** G1 LED Image Projector by OSI is the first LED image projector offering 40 lumens per watt and Gobo projection. It features a 800-lumen output with uniform intensity across a projected image. Gobos can be made by the end user on a photo quality printer.

The Winline Submersible 607 Luminaire by **Winona Lighting /Acuity** has the highest output totally submersible LED linear luminaire. It offers 1,700 lumens at 4,000K and is suitable for installations up to 3 meters deep, with the LEDs cooled internally via water passing through a copper heatsink.

Beacon Products, a **Hubbell** brand, has designed a low glare LED optic with a 55 deg peak beam angle optimized for low ceiling and drive lanes to minimize glare. The T5R low brightness optic works in new and retrofit installations.

2011 Progress Report



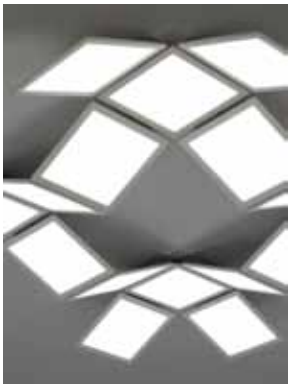
The first fixture to use this new optic option is the **Beacon** Endura. This LED parking-garage ceiling mount luminaire features low-glare, dual directional drive lane optics.

A new angled LED prism optic system has been introduced by **Kim Lighting**. The VRB series of vandal resistant bollards are the first louvered bollards to achieve the equivalent footcandles at 10 ft from the bollard as a 50-W metal halide lamp using 66 percent less energy.

Targetti Poulsen USA has introduced its Rubbie LED bollard, which was recognized by the Committee for its all rubber construction in a decorative LED luminaire with an efficacy of 42.7 lumens per watt. The LED body is made of UV-stabilized EPDM rubber and functions as a lighting fixture and resting seat.

The LightVault LED is the first in-grade luminaire to utilize the MicroEmitter LED technology from **Kim Lighting,** a Hubbell brand. This technology eliminates the need for obtrusive shields and louver systems for glare control, and features upgradable LED emitters.

The BR840 Series Full Cutoff LED Bollard by **Philips Gardco** is an LED square distribution bollard with an efficacy of 77.4 lumens per watt. Its area of coverage to a one footcandle minimum is larger than with other equal bollards relative to total power consumed.



Revel by **Acuity Brands/Winona** is recognized as the first OLED surface mounted general illumination luminaire. Revel is also suitable for specialty and decorative lighting in conference rooms, reception areas and other spaces.

Acuity Brands/Winona has introduced Kindred as the first OLED linear general illumination luminaire for pendant, surface ceiling, surface wall and post mounted applications. It is less than 0.5 in. thick using a composite material housing and shell construction.

The Progress Report often recognizes the first application of new technology. A case study of the Scruggs Farm, Lawn and Garden store shows the first application of **Philips Day-Brite's** AlumaBay fluorescent high-bay fixture accepted in the 2010 Report. This application saved over 50 percent in energy costs.

The Providence LED fixtures from **AAL** accepted previously into the Progress Report have now been installed by the City of East Lyme, CT. Providence was the first family of LED exterior luminaires to offer field interchangeable LED optics.

Introduced by **WAC Lighting**, SOL is recognized by the Committee as the first commercially available OLED chandelier. SOL features upgraded OLED panels which deliver a total light output of 420 lumens.

The 2010 Progress Report accepted an innovative quick and secure connector for 12-volt landscape lighting. The **Hubbell** Outdoor Lightscaper System has now been accepted into the Report for the first application of this technology. This tool-free connector was installed in a high-end residence in Mirror Lake, NH.

The first LED exterior luminaire upgrade kit was accepted into last year's Report. The first installation of the Designer SSL Series Upgrade Kit from **AAL** provided Cal State in Fullerton, CA, a sustainable and economical alternative to replacing the entire luminaire.

2011 Progress Report

Continental Inc. used a unique light engine to retrofit hundreds of gas light posts with a 24-volt system in a master planned community in Deland, FL. This entire neighborhood used 800 LED retrofit fixtures and about 100 new fixtures. There was a two-year payback.

Cooper Lighting has released the Color Neutral Linear Spread Lens that utilizes a novel glass technology. This new glass lens material, used for wall-wash luminaires, avoids the green tint of light though standard glass by enhancing light transmission in the red region of the spectrum, increasing the optical efficiency of the glass by approximately 2.5 percent.

The HALO four-inch LED adjustable gimbal trim family from **Cooper Lighting** is the first MR16-like LED trim for both commercial and residential applications which require both IC and non-IC rated product. The LED package is a unified "virtual" single source that closely matches the performance and appearance of an MR16 due to the source being recessed into a multi-faceted reflector. It is available in 23, 35 and 50-deg beam angles.

The first installation of the PGL7 LED parking garage luminaire from **Kim** is in Auburn, AL, at the North Park Parking Garage. Nighttime energy consumption was reduced by more than 50 percent.

Cooper Lighting's HALO wall wash trim for 6- and 4-in. apertures is the first residential and commercial grade LED trim of its kind, making this trim type available for IC and non-IC applications. The optical system delivers uniform wall footcandles with up to 625 lumens in a 4-in. housing and 1,410 lumens in a 6-in. housing.

The FSP-211 Digital High/Low Passive Infrared Fixture Sensor from **Wattstopper**, a LeGrand company, is the first fixture-integrated sensor to feature two fully adjustable levels for high and low as well as off. The sensor is rated from minus 40 deg F to 167 deg F, and incorporates a relay rated for 200,000 cycles.

OSRAM Sylvania has added dimming to their ICETRON induction lamp. The Quicktronic ICETRON 100-W dimming system provides continuous dimming via a 0 to 10 volt signal with a range of 100 to 40 percent. It is UL Type 2 wet location listed.

The first integrated 0 to 10 volt outdoor dimming control has been introduced by **GE Lighting**. The controller has both ON/OFF and dimming in a single package. It automatically dims a pre-set number of hours after dusk, or at midnight, and returns to full power at 5 AM. It can also adjust LED power over time to compensate for lumen depreciation.

Lutron Electronics Co has introduced the C-L family of dimmers for dimmable CFL and LED lamps. They include voltage compensation circuitry and a low end trim to account for the variation in the dimming range of different lamps. The 5-W minimum load is the lowest for a no neutral or two-wire dimmer.

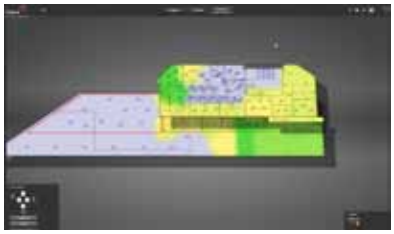
Wasp 2 is the only IP65 sensor that also features smart cycling. Wasp 2, from **Hubbell** Building Automation, is a surface-mounted fluorescent high-bay sensor designed for low-temperature and water-tight applications. The smart cycling feature ensures that all lamps receive even burn times.

The DCL and DemandFlex DY Dimming Ballasts and Controls from **Universal Lighting Technologies** have added granular zone control to their power line carrier scheme. Previously limited to one zone, this new system allows up to three zones per circuit to take advantage of different manual and daylighting zone needs without any additional wires.

Lutron has expanded the EcoSystem family of products with the Powpak Dimming Module. The module provides control of up to 32 luminaires via wireless occupancy sensors, daylight sensor and manual controls. Setup uses pushbuttons, so no PC is needed.

2011 Progress Report

The SmartSense Lighting Control System from **Kenall Lighting** is a closed-loop design. The L_{70} lifetime detection system alerts the user when LED luminaires have reached a 30 percent lumen depreciation point relative to the initial commission level.



Encelium Technologies has introduced Polaris 3D Lighting control software, which is recognized by the Committee as the first 3D web-based application software. It allows facility managers to navigate through an entire facility in a single multi-floor view as opposed to tree architecture.

An advanced metering system has been included in the Venergy product by **Cooper Controls**. It is capable of monitoring any electric load at the circuit level as well as non-electric loads such as gas, water or steam usage. It is supported by a wide range of remote monitoring devices and is cloud-based, eliminating server maintenance by the user.

Automated shading control has been expanded by **Lutron** with the addition of the Venetian Blinds with Intelligent Tilt Alignment. The venetian blinds can be controlled automatically to allow the slat angle to be adjusted and include a second motor to allow the height of the shade to be raised or lowered as well.

Sensor Switch, an Acuity Brand company, has added the nLight to BACnet IP Software Plug-n to its lighting control system. This software is a free downloadable plug-in that provides web-based software to serve as a gateway to control an entire building.

Philips Day-Brite has released a new wall light and emergency unit called the Patron LED. The LED light source provides 740 lumens in AC mode and 500 lumens in emergency mode, allowing for increased center-to center spacing. The nickel-cadmium battery is integral to the unit.

A retrofit socket adapter system has been developed by **Philips/Guth Lighting**. This system provides a straightforward method to replace lower efficacy lamp/ballast combinations with the MCE sources that were introduced in last year's Report. The MCE systems are rated at 103 lumens per watt.

OSRAM Sylvania has also introduced the Quicktronic QTO Dimming System for metal halide and high pressure sodium lamps. It the first UL Type 2 wet location listed dimming system for 100, 150, and 200-W metal halide and high pressure sodium lamps. There are three dimming modes with a possible range of 100 to 40 percent.

Transient protection for 480-volt line applications is provided integral to this Ultramax instant start T8 ballast from **GE Lighting**. ANSI 62.41 C class line surge protection to 6 kilovolts is offered on the two, three and four-lamp versions.

The first full family of 347-volt programmed start ballasts with parallel lamp operation is now available from **GE Lighting**. Carrying a UL 55C ambient rating, the ballasts are available in both 0.71 and 1.18 ballast factors. Lamp starting times are less than 700 milliseconds, and the ballast has a complete cathode cutout for energy savings.

The new Ultra RT4 Recessed Downlight Kit from **OSRAM Sylvania** has the highest lumens and lumens per watt for a 4-in. LED retrofit kit. It provides 550 lumens at 9 watts, has a 35,000 hour rated life and is dimmable from 100 to 20 percent.

The Quicktronic Instant Start high output ISH 347-480V HT ballast, also from **OSRAM Sylvania**, is the industry's first four-lamp ISH ballast for T8 lamps with an input power of 347 to 480 volts. The ballasts are RoHS compliant and offer a 5 year warranty at 70 deg C.

GE provides high-level transient protection in their two and four-lamp versions of their UltraStart, programmed start T5HO ballasts with an input range of 347 to 480 volts. These ballasts operate the lamps in parallel, are UL 55 degrees C rated, and employ complete cathode cutout for energy savings.

2011 Progress Report

The OT15W Phase Cut Dim from **OSRAM Sylvania** is the smallest LED power supply for 15 watts. Its volume is 5.62 cubic inches, with a rated case temperature of 75 deg C. It is capable of being controlled with either forward or reverse phase control dimming.

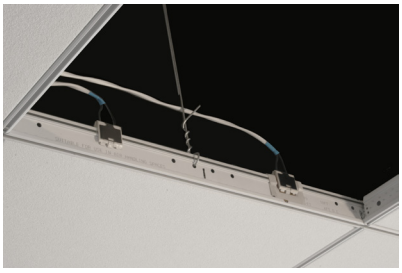
Universal Lighting Technologies has released the L3C4C42UNVA-A, a four-channel, dual control LED driver. This 255 milliamp constant-current driver is the first to combine light-level switching with input power leads and 0 to 10 volt dimming control in a single driver. This functionality allows the Class 2 analog dimming control to be set at any level and then power levels can be reduced another 50 percent using standard wall switches.

The LINEARdrive 720D from **eldoLED America**, Inc. is a multi-protocol LED driver for 5, 12, 24 and 48 volt strips that can support these multiple voltages concurrently. In addition, the driver is compatible with DMX/RDM, DALI and 0-10 volt protocols, and the four separate outputs can each offer up to 6 amps of output current. A three-button user interface allows the system to be operated in stand-alone mode.

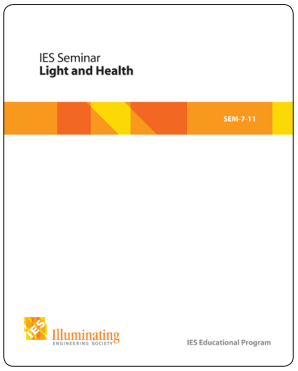
Also from **OSRAM Sylvania** is the OT50W Multiple Output LED Power Supply. It is a 50-W power supply that is factory configured for 1 to 4 outputs, potentially reducing the number of power supplies required. Each output can be dimmed via a 0 to 10 volt signal.

The OT96W 24 Volt Dim is another high density LED power supply from **OSRAM Sylvani**a. At 18.7 cubic in., it is the smallest power supply for 96 watts on the market. Its cross section is consistent with common T8 ballasts making it easily retrofittable, and it is capable of being controlled via a 0 to 10 volt signal.

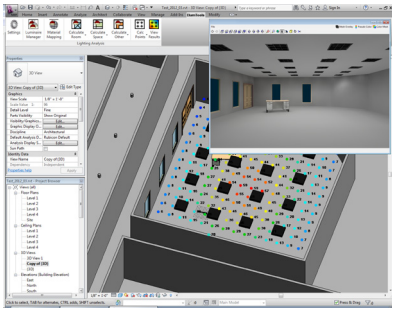
Philips Emergency Lighting has extended their line of emergency LED drivers with the addition of the BSL17C-C2 product that carries a low-voltage, limited energy certification as a Class 2 device. It can maintain a 7-W LED load in the range of 30 to 50 volts DC and has a 120/277 volt dual-input capability.



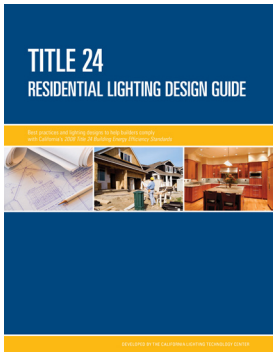
DC power distribution is taking a step ahead with the DC FlexZone Grid System from **Armstrong**. It represents the first commercially available grid ceiling to comply with standards from the EMerge Alliance.



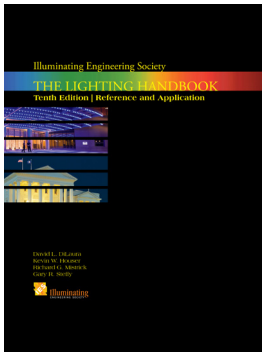
This year, the **IES** has released a new educational seminar titled "Light & Health." Some of the many topics discussed include components and functioning of the visual, circadian, neuroendocrine and neurobehavioral systems.



Lighting Analysts, Inc. has developed a new set of fully-integrated lighting tools for Autodesk Revit. Called ElumTools, the package eliminates the need for Revit users to do lighting calculations externally and manually enter results into the program.



The California Lighting Technology Center has published the *2008 Title 24 Residential Lighting Design Guide*. The guide presents best practices and lighting designs to help builders comply with California's Title 24. Sponsored by the California Energy Commission and the Public Interest Energy Research program, it should help the building community deliver practical, high-performance, cost effective residential lighting solutions.



The long awaited *Tenth Edition Handbook* has been published by the **Illuminating Engineering Society** this year. It contains state-of-the-art best practices for the lighting industry which are too numerous to mention, but include new illuminance determination procedures, sustainability practices, qualitative lighting design criteria, and updates on light sources including LEDs.

THE CLEAR LEADER IN HIGH-ILLUMINANCE ENERGY SAVINGS.

Highly Efficient
Energy savings of between 40% and 70%

Extended Lamp Life
3 to 4 times extended life compared to standard metal halide lamps

50,000 operating hours

Reduced maintenance schedule

Superior Color
Brilliant white light improves light quality and color

CRI as high as 95; 5000 CCT

Please call us at 1-408-734-1096 or visit luxim.com/specify.

We'd like to show you how LEP™ will make your fixture or lighting application more efficient, more durable, and more attractive.

WHEN TO USE LIGHT EMITTING PLASMA™ (LEP)

LUXIM

© 2010 Luxim Corporation. All rights reserved. Luxim, the Luxim logo, LiFi, LEP, and Light Emitting Plasma are trademarks of Luxim Corporation in the United States and other countries.